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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/294,367	04/20/1999	TADASHI SAWAYAMA	35.C13470	6055

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EXAMINER
KACKAR, RAM N

ART UNIT	PAPER NUMBER
1763	8

DATE MAILED: 07/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

1-D

Office Action Summary	Application No.	Applicant(s)	
	09/294,367	SAWAYAMA ET AL.	
	Examiner	Art Unit	
	Ram N Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-55* is/are pending in the application.

4a) Of the above claim(s) *1-11,28-34 and 39-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-14,16-27,35-38 and 45-55* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) *1-55* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-11, 28-34 and 39-44, drawn to a method, classified in class 427, subclass 248.1.

   II. Claims12-27, 35-38 and 45-55, drawn to an apparatus, classified in class 118, subclass 715.

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus could be uses for etching.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Peter Saxon on 7/2/02 a provisional election was made with traverse to prosecute the invention of Group II, claims 12-27, 35-38 and 45-55. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-11, 28-34 and 39-44 are withdrawn from further consideration by the examiner, as being drawn to a non-elected invention (37 CFR 1.142(b)).

Claim Rejections - 35 USC § 112

5 The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6 Claim 55 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the phrase " having the processing space" in line 5 seems unclear.

Claim Rejections - 35 USC § 102

7 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8 Claims 45-46, 53 and 55 are rejected under 35 U.S.C. 102(e) as being anticipated by Schmitt et al (US Patent 6099649). Schmitt et al disclose a processing apparatus having a processing chamber for CVD (Fig 1-14 and Col 1 line 11), exhaust means (Fig 1-22), chemical reaction means for the exhaust- hot trap (Fig 1-16) and a recovery means- a cold trap also a wall surface of the exhaust path (Fig 5-501). In another embodiment Schmitt discloses cooling means

provided on the side of the exhaust means (Fig 1-28) while cooling uses liquid as cooling medium (Col 7 line 16).

Claim Rejections - 35 USC § 103

9 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10 Claims 23-25, 35-36, 48-49 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt et al (US Patent 6099649). Schmitt et al disclose a processing apparatus having a processing chamber (Fig 1-14), exhaust means (Fig 1-22) and chemical reaction means for the exhaust- hot trap (Fig 1-16). Schmitt et al do not expressly disclose that recovery means-cold trap is within 5 cm of the reaction means-hot trap. Schmitt recommends that (Col 6 line 1-6) the cold trap should be following hot trap and close to it. Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to place the cold trap within 5 cm of the hot trap so as to avoid heating the foreline. Regarding claims 35-36, it would be obvious that the velocity in general will be different at different regions and will be higher closer to the exhaust means where the pressure will be lowest. Regarding claims 48-49 and 51 it is well known and used practice to insulate devices in physical proximity but independently controlled in temperature to have better control over temperature and conserve energy.

11 Claims 12, 26-27 and 37-38 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt et al (US Patent 6099649) in view of Ohta et al (US Patent 5209182). Schmitt et al disclose a processing apparatus having a processing chamber for CVD (Fig 1-14 and Col 1 line 11), exhaust means (Fig 1-22) and chemical reaction means for the exhaust- hot trap (Fig 1-16). Schmitt et al do not expressly disclose the heater to be made of a filament or temperature control of the processing space member. Ohta et al disclose a CVD apparatus using a hot filament of tungsten going at least to 2100 degrees C (Col 6 line 53) and a precise temperature control (Col 4 line 3 –28). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to heat the trap of Schmitt et al with tungsten filament to get the high temperature needed for trapping the unused gas/by-products.

12 Claims 13-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt et al (US Patent 6099649) in view of Smith et al (US Patent 5217545). Schmitt et al disclose a processing apparatus having a processing chamber for CVD (Fig 1-14 and Col 1 line 11), exhaust means (Fig 1-22) and chemical reaction means for the exhaust- hot trap (Fig 1-16). Schmitt et al do not disclose the heater to be comprised of phosphorus or silicon. Smith et al disclose a heater containing phosphorus and silicon with chromium and molybdenum, the ratio of silicon being more than 0.1% (Abstract). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to use the alloy of Smith for its excellent resistance to oxidation at elevated temperature. Claims 16 and 21 are rejected as being directed to an intended use.

13 Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt et al (US Patent 6099649) in view of Keiichi Akagawa (JP Patent 62236129). Schmitt et al disclose a

processing apparatus having a processing chamber for CVD (Fig 1-14 and Col 1 line 11), exhaust means (Fig 1-22) and chemical reaction means for the exhaust- hot trap (Fig 1-16). Schmitt et al disclose liquid or any other thing as cooling medium for cold trap but do not disclose it to be a gas. Keiichi Akagawa discloses a refrigerant cooling. A refrigerant could be in a gaseous phase. Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to use liquid or refrigerant gas for cooling of cold trap.

14 Claims 52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitt et al (US Patent 6099649) in view of Kikuchi Yoshikazu (JP 63200820). Schmitt et al disclose a processing apparatus having a processing chamber for CVD (Fig 1-14 and Col 1 line 11), exhaust means (Fig 1-22) and chemical reaction means for the exhaust- hot trap (Fig 1-16). Schmitt et al do not disclose a catalyst acting on unreacted gas or by-product or that the non-reacted gas could be containing silicon. Kikuchi Yoshikazu discloses a catalyst and silane gas as an unreacted gas. Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to use a catalyst in addition to heating to completely react the unreacted gases and by-products.

Allowable Subject Matter

15 Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: JP 60-1827.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

July 15, 2002

GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700